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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,749	09/05/2003	Brian David Trotter	1457-CA (P280US)	9065

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EXAMINER

NGUYEN, JOHN B

ART UNIT PAPER NUMBER

2819

DATE MAILED: 03/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/656,749	<b>Applicant(s)</b> TROTTER ET AL.	
	<b>Examiner</b> John B Nguyen	<b>Art Unit</b> 2819	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,11,14-17 is/are rejected.
- 7) ☒ Claim(s) 3,8-10,12,13 and 18-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-7, 14-16 Are rejected under 35 U.S.C. 102(b) as being anticipated by Toyomaki (U.S. Patent No. 5,008,675)

2. Regarding to claim 1, A pulse width modulator (Fig. 4) comprising: at least one input (7) for receiving an input signal; pulse width modulation circuitry (Fig. 4) for generating a pulse width modulated stream (A) and another pulse width modulated stream ( $\bar{B}$ ), the pulse width modulated stream (A) and the another pulse width modulated stream ( $\bar{B}$ ) being nominally out of phase (Fig. 7, A and  $\bar{B}$  are out of phase) and together representing the received input signal; and a summer (6) for summing the pulse width modulated stream (A) and the another pulse width modulated stream ( $\bar{B}$ ) to generate an analog output signal (8).

3. Regarding to claim 2, wherein the pulse width modulation circuitry (Fig. 4) comprises a pulse width modulation encoder (1) and another parallel pulse width modulation encoder (3) for generating the stream (A) and the another stream ( $\bar{B}$ ).

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4. Regarding to claim 5, wherein the pulse width modulation circuitry (Fig. 4) generates the stream (A) and the another stream ( $\bar{B}$ ) having equal duty cycles (Fig. 7, duty cycle signal A,  $\bar{B}$ ) in response to a midlevel value of the input signal.
5. Regarding to claim 6, wherein the pulse width modulation circuitry (Fig. 4) generates the stream (A) and the another stream ( $\bar{B}$ ) with symmetrical waveforms (Fig. 7) in response to a midlevel value of the input signal.
6. Regarding to claim 7, A digital to analog converter (Fig. 4, column 3, line 48-49) comprising: a pulse width modulation stage (Fig. 4) for receiving a modulator input stream (7) and outputting in response a duty cycle modulated stream (A) and simultaneously another duty cycle modulated stream ( $\bar{B}$ ), the duty cycle modulated stream and the another duty cycle modulated stream being nominally out of phase (A and  $\bar{B}$  are out of phase); and conversion circuitry (6) for converting the duty cycle modulated stream and the another duty cycle modulated stream into an analog signal (8).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyomaki (U.S. Patent No. 5,008,675) in view of Melanson et al. (U.S. Patent No. 6,693,571 B2).

The applied reference has a common ASSIGNEE with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

9. Regarding to claims 4, 11 and 17, Toyomaki disclose all limitations but fails to ~~discloses a delta-sigma modulator and noise shaping. However, Melanson et al.~~  
discloses the delta-sigma modulator (Fig. 5, 504) and noise shaping (column 6, lines

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12-19, column 7, lines 26-35). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the delta-sigma modulator of Melanson et al. to system of Yotomaka to provide noise attenuation in one or more noise frequency bands and output the signals to pulse width modulators.

10. Regarding to claims 14-16, the apparatus discussed above would perform the claims of methods.


### **ALLOWABLE SUBJECT MATTERS**

11. Claims 3, 8-10, 12-13, 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (See enclosed Form PTO-892).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Nguyen whose telephone number (571) 272-1808. The examiner can normally be reached on 8AM-4: 30 PM M-F.

  
John B. Nguyen  
February 20, 2004

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